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that such a faunal study as I have mentioned, embracing any extended area, has ever been made.

In a recent article in 'The Auk' (Vol. XII, 'The Summer Range of Colorado Birds') Prof. Cooke ignores any such element as this in the study of Colorado birds, and for this reason he may describe anything but a natural state of affairs. For instance, the present status of the Western Meadowlark, Mourning Dove, Say's Phoebe, and Bullock's Oriole, in the Cache la Poudre Valley, must of a necessity be very different from what it was forty years ago, when nothing existed there to modify the natural distribution of the species. Thus it is entirely possible that Prof. Cooke's statement that "there is a greater variety of birds among the foothills, but not so many individuals as on the plains," may represent only an artificial condition. To describe the range of an animal like the buffalo, which occurred in immense numbers over a large part of the United States, as "very rare, occurring in small herds of some half a dozen individuals each, in remote fastnesses of the Rocky Mountains," would be but illy describing the life and distribution of the hordes of the plains.

At some few localities investigations have been carried on to determine the primitive and natural distribution of birds in our desert regions. But these regions are not now being irrigated and probably never will be. Studies should be prosecuted now in those regions liable to irrigation. It is from these as a basis that exact comparisons can be drawn in future years, and exact values given of effects produced by such tremendous surface changes as those occasioned by irrigation and the settlement of the arid region.

THE PINE GROSBEAK IN CAPTIVITY.

BY O. W. KNIGHT.

THE winter of 1892-93 will be long remembered by Maine ornithologists on account of the great number of Pine Grosbeaks (*Pinicola enucleator*) which visited this State. November 16, 1892,

I noticed two or three individuals feeding on seeds of the white ash near Orono, Maine. December 25 a flock of about two hundred individuals appeared in the yard of a friend in Bangor and began to feed upon the seeds of crab-apples of which a large quantity remained on the leafless trees in his yard. He at once sent word to me, and I was soon on the spot. I determined to catch a pair of the birds and see if they could be induced to breed in captivity.

A horse hair slip noose was speedily arranged at the end of a bean pole, and with this crude apparatus I essayed to capture the birds, which were very tame. They would sit quietly engaged in feeding, while I slipped the noose over one's head, and hauled it from its perch on the tree. The remainder of the flock did not seem to take any notice of the queer antics of their captured comrade, which uttered loud, harsh cries when handled while the noose was being removed from its neck. In this way about twenty females and young males were captured, but the handsome adult males were more wary and remained near the top of the tree, so that it was impossible to capture any of them.

After a careful scrutiny of the captives, I selected two likely looking ones which by sheer luck turned out to be a pair. My friend also selected a couple of the birds, and the remainder were set free. My pair of birds were placed in a large cage in our kitchen, where they would become accustomed to seeing persons near them, and they quickly became very tame. The next day after their capture, the male began to sing in a low ventriloquial voice which seemed to come from an entirely opposite direction from where he was.

In a few days they would eagerly take apple and hemp seed from my hand, and very soon I would allow them to come out of their cage and fly about the room. When I desired to get them into their cage again, a few seeds placed near the door at once enticed them within.

The male quickly assumed the ascendancy, and did not allow the female to partake of any proffered dainties until his own appetite was satisfied. The second week in May he showed indications of pairing, and nesting material was put in the cage. Both birds would carry this around the cage in their beaks, but did not seem to know how to begin to build a nest. May 30, the

male was found dead in the cage. Notwithstanding this, the female continued preparing to lay, and the morning of June 10 an egg was found in the bottom of the cage. June 11 a second and last egg of the set was laid. They were of a greenish blue color, spotted with black and lilac. The spots were thickest at the larger end where they tended to become confluent and form a wreath. The eggs measured $1.00 \times .68$ and $1.02 \times .64$ inches respectively.

The next winter, 1893-94, no Grosbeaks were observed in this vicinity, and so I was disappointed in getting a mate for my bird. The last of May, 1894, she showed signs of desiring to build a nest. An old nest of the Loggerhead Shrike was placed in a box in her cage, and she at once occupied herself in tearing it to pieces and attempting in a crude way to build a nest. On June 9, 14, 17, 22, and 23 she deposited eggs which exhibit the following dimensions: $.90 \times .69$, $.94 \times .70$, $.95 \times .68$, $.90 \times .65$, and $.90 \times .69$. On completion of this set she desired to incubate, acting very much like a sitting hen. In July she again began to prepare a nest, and on July 17 and 18 she laid eggs which measure $.81 \times .64$ and $.86 \times .62$ in.

January 17, 1895, a few Grosbeaks were observed feeding on some sumach berries in a small grove near Bangor. February 2 a flock of about twenty visited a crab-apple tree in a neighbor's garden, and, although they were very wild, I finally managed to capture one which proved to be a young male. He was at once introduced to the captive female, but the two developed a strong antipathy to each other, and a fierce fight ensued, so that I was obliged to place them in separate cages.

May 20 the female began to build a nest, and I again tried to mate the birds, but they at once began to attack each other, so I was obliged to give up all hopes of their mating.

On May 28, 29, and June 5, 6, and 7 eggs were deposited which measure $.92 \times .69$, $.83 \times .66$, $.93 \times .71$, $.88 \times .70$, and $.88 \times .69$ in., and the female at once desired to incubate. June 11 the bird began to construct another nest, and on June 14, 15, 22, and 24 she again laid. The eggs measure $.99 \times .70$, $.86 \times .67$, $.95 \times .70$, and $.64 \times .57$ in. The last egg laid was very small and contained no yolk. The bird now ceased laying until July, when on

July 10, 11, and 12 she laid eggs measuring $.93 \times .69$, $.94 \times .68$, and $.88 \times .69$ in. I now supposed that she was through with her remarkable production of eggs, but to my astonishment on July 25, 26, and 27 she again laid, the eggs measuring $.93 \times .67$, $.89 \times .64$ and $.90 \times .65$ respectively. This ended the production of eggs for this year. In August I tried to put the male in the cage with the female, and this time they managed to get along without quarreling, and have been kept in one cage ever since.

It was very interesting to observe the moulting of the male, and see him gradually take on the adult plumage. July 20 a few orange colored feathers could be observed on his head near the base of the bill; these gradually grew until on August 1, his drab colored head feathers were all replaced by orange colored ones. July 25 a few orange feathers were noted on his throat, and these grew and replaced the old ones until on September 5 the moult was completed. The feathers of the head, throat, etc., are of a peculiar orange color instead of the beautiful red hue which characterizes the wild birds of the same sex.

DESCRIPTIONS OF AN APPARENTLY NEW SPECIES AND SUBSPECIES OF PTARMIGAN FROM THE ALEUTIAN ISLANDS.

BY D. G. ELLIOT, F. R. S. E.

*Plate III.*¹

DURING a late visit to Washington my friend Mr. R. Ridgway kindly allowed me to examine the extensive series of Ptarmigan in the collection of the National Museum with permission to describe any novelties I might discover, and the two apparently new forms named in this paper are the results of my investigations.

¹ The publication of this plate is necessarily deferred till the July number.